RFQ Number	**NTP-PRJ-MM-RFQ-25-0054-Rev 3**
Request for Quotation Date	**2025/08/18**
RFQ Closing Date	**2025/09/02**
RFQ Closing Time	**15:00**
Compulsory Site Briefing	**Online clarification meeting to be requested if required**
Site Briefing Date	**N/A**
Contact Person	**Itumeleng Mathibe / Tel: 012 305 5163**
Quotation Validity	**90 Days from the closing date**
Submission Details	**RFQ Response must be sent to: Itumeleng.Mathibe@ntp.co.za**
RFQ Description	**Support services to update the SAFARI-1 SAR to address identified improvements and other updates necessary in preparation for the nuclear license extension application (LTO).**

Dear Service Provider

Kindly provide a quotation for goods and or services as outlined in the scope of work of this document.

1. Introduction

Conducting its sophisticated operations amongst an array of state-of-the-art technology and by highly competent scientists, engineers, technologists and pharmacists, NTP Radioisotopes SOC Ltd is one of the world's leading suppliers of essential medical radioisotopes.

A subsidiary of the South African Nuclear Energy Corporation (Necsa), NTP produces a quarter of the world's medical radioisotopes which are used in about 40 million medical diagnostic images every year, making it the third largest producer and supplier globally. Use of nuclear medicines allows for gathering of medical information that may otherwise be unavailable, require surgery or necessitate more expensive and invasive diagnostic tests.

This proudly South African corporate company is situated at the sophisticated Necsa nuclear facility site, west of Pretoria and routinely serves customers spanning 60 countries worldwide with its range of nuclear radiation-based products and services. The company has maintained consistent revenue and market share growth and has over the past years created various business subsidiaries or increased holdings in these that strengthened its portfolio.

For more information on NTP Radioisotopes SOC Ltd visit: www.ntp.co.za

Scope of Work

Scope of work includes below but not limited to:

a) Background:

SAFARI-1 reached 60 years of safe operation in March 2025. Its Nuclear Installation License expires on 31 December 2030. Necsa intends to apply to the National Nuclear Regulator (NNR) for a license extension until 31 December 2040. Therefore, a periodic safety review (PSR) and an ageing management assessment are being done to support Necsa's application for a license extension (also referred to as Long Term Operation – LTO). The IAEA has been invited to conduct a Safety Aspects of Long-Term Operation (SALTO) mission to assist Necsa with ensuring readiness for safe LTO.

Updates to the SAFARI-1 Safety Analysis Report (SAR) will be required as an outcome of a recent review, the upcoming PSR, and ageing management assessments, in preparation for LTO.

A description of the SAFARI-1 reactor is provided in Annexure 1.

b) Description:

The requirement is for support services to update the SAFARI-1 SAR to address identified improvements and other updates necessary in preparation for the nuclear license extension application (LTO).

c) Contractor's Scope of Work:

The Contractor's scope entails the following:

- Compile a procedure for managing updates to the SAR that includes a SAR change request process, a SAR change review/approval process and a SAR change tracking/monitoring process.
- Review the comments and updates required.
- Address the individual comments.
- Update the SAR.

The SAR consists of 21 chapters. The majority of the updates affect the following chapters:

- Chapter 3: Site Characteristics
- Chapter 4: Buildings and structures
- Chapter 19: Decommissioning
- Chapter 20: Emergency plan
- Chapter 21: Risk analysis (DSA and PSA)

In total, there are approximately 60 review comments of various complexities that need to be addressed, and some or all comments may result in updates to the SAR.

Furthermore, updates to the SAR following the PSR and ageing management assessments are expected. These will be assessed on a case-by-case basis.

Two full submissions of the SAR to the NNR for approval are anticipated. The first will be to address all current review comments, and the second is to incorporate updates from the PSR and ageing management assessments, as well as any further comments from the first submission.

The Contractor is expected to execute all aspects of this Scope of Work in close technical collaboration with designated Necsa subject matter experts (SMEs). This collaboration will involve, but not be limited to, regular technical interface meetings, joint workshops for specific safety factors or systems as needed, and direct engagement with Necsa SMEs for clarification, data interpretation, and review of interim findings. The aim is to ensure that the comments are comprehensively addressed, the updated SAR accurately reflects the design and existing safety analyses, and to facilitate effective knowledge sharing and validation.

Deliverables

- A procedure for updating and controlling changes to the SAR.
- Engineering response(s) to address each SAR review comment.
- 21 updated SAR chapters that address the outcome of the review comments and review responses, especially updated DSA and PSA.

d) Project team and categories of labour required

The Contractor shall provide a project structure to execute the project and is sufficiently resourced with suitably qualified and experienced resources to meet the agreed timelines. The Employer reserves the right to examine the certification of personnel chosen by the Contractor.

It is anticipated that the following skilled resources will be required on the project team:

- Engineering specialist(s) with experience in seismology, siting and external hazards
- Civil engineer(s) with experience in structural stability and ageing of concrete structures
- Engineer(s) (or similar) with experience in Probabilistic Risk Assessment
- Electrical engineer with experience in emergency diesel generators
- A scientific specialist in hydrogeology with experience in groundwater modelling and contamination.
- Nuclear engineers with a broad range of experience in emergency planning, research reactor decommissioning, and safety cases.
- Administrator(s) for tracking the updates, updating the SAR, and reporting on progress.

Not all the experts/resources are expected to be part of the project team for the full duration of the project, but will participate to address specific SAR updates as required.

e) Timing and planning

The preliminary timeline for submission of all documentation to the NNR in support of Necsa's license extension application is 31 December 2027. This is to afford the NNR sufficient time to

evaluate Necsa's application for a license extension. However, the PSR documentation, consisting of the individual PSR reports, global assessment report and integrated implementation plan, shall be completed and submitted to the NNR no later than 1 July 2027.

The overall project timeline is expected to start (task order issued): 15 September 2025.
The project is expected to end: 31 December 2027.

f) Working hours and work location

Normal working hours apply, but there is flexibility for remote work and alternate working hours.

g) Training

Training, medical testing and security clearance will be required for staff who need to access the facility's site and networks.

a) Necsa's scope of supply

The Employer is responsible for the provision of:

- Training associated with enabling the Contractor to gain access to the site.
- Provide access to the relevant data needed for the SAR.
- Facilitate communication with the NNR.

2. Pricing

- All price must be quoted in South African Rand, exclusive of VAT with details on price elements that are subjected to escalation and exchange rate fluctuations clearly indicated.
- Price must be fixed and firm.
- Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable, disbursements etc.
- Quotation must be completed in full, incomplete quote could result in a quote being disqualified.
- Payment will be according to Necsa's General Conditions of Purchase.

3. Evaluation

3.1. Phase 1- Functionality Evaluation / Technical Evaluation

Where functional or technical evaluation criterion is applicable, assessment will be performed in terms of the criterion listed below and the criterion may include Technical, Performance, Quality and Risk.
If the Bidder's response to the Technical templates does not indicate that the Bidder can support an acceptable technical solution, the Bidder's response will be rejected and not evaluated further.

Together the Technical, Performance & Quality and Risk criteria make up the functionality criterion and a Bidder's Proposal will be evaluated for functionality out of a possible 100 points. Only RFQ responses achieving an evaluation score of greater than the set threshold points out of the possible 100 points and which score a number of points for functionality that is greater than or equal to the set threshold points of the number of points achieved by the highest scoring Bid for functionality will be selected to progress to the second stage.

3.2. **Phase 2 - Evaluation In Terms Of Preferential Procurement Policy Framework Act, 2022**

This bid will be evaluated and adjudicated according to the 80/20 point system, in terms of which a maximum of 80 points will be awarded for price and 20 points will be allocated based on the specific goals (B-BBE status level).

	POINTS
PRICE	**80**
SPECIFIC GOALS (B-BBEE status level)	**20**
Total points for Price and SPECIFIC GOALS	**100**

Preference goal
B-BBEE status level contributor

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

4. Required Documentation

- **Valid BEE Certificate**
- **Valid Tax Pin**
- **COIDA Certificate**
- **CIDB Grading level 1 and Potential emerging is eligible.**

5. Important

5.1. Quotation must be submitted on or before the RFQ closing date and time stated above.

5.2. Orders above R 30 000 will be evaluated according to the PPPFA 80/20-point system and a functionality scorecard where applicable and the ones above R 1 Million will be subjected to the tender process.

5.3. This RFQ is subjected to the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC) and, if applicable, any other legislation or special conditions of contract

5.4. Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for specific goals are not claimed.

5.5. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to specific goals, in any manner required by the purchaser.

5.6. For a Bidder to obtain clarity on any matter arising from or referred to in this document, please refer queries, in writing, to the contact details provided above. Under no circumstances may any other employee within NTP be approached for any information. Any such action might result in a disqualification of a response submitted in competition to this RFQ.

5.7. No goods and/or services should be delivered to NTP without an official NTP Purchase order.

5.8. NTP reserves the right to; cancel or reject any quote and not to award the RFQ to the lowest Bidder or award parts of the RFQ to different Bidders, or not to award the RFQ at all.

5.9. The supplier shall under no circumstances offer, promise or make any gift, payment, loan, reward, inducement, benefit or other advantage, which may be construed as being made to solicit any favour, to any NTP employee or its representatives. Such an act shall constitute a material breach of the Agreement and the NTP shall be entitled to terminate the Agreement forthwith, without prejudice to any of its rights

5.10. By responding to this request, it shall be construed that: the bidder, hereby acknowledge to be fully conversant with the details and conditions set out in the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC), Technical Information and Specifications attached, and hereby agree to supply, render services or perform works in accordance therewith

Annexure 1 – general description of the SAFARI-1 reactor

SAFARI-1 is a tank-in-pool type research reactor of similar design to the ORR reactor at Oak Ridge, Tennessee, USA. SAFARI-1 is a high neutron flux, light water-moderated and cooled, beryllium and light water reflected research reactor designed and built as a general research tool, falling in the class of research reactors commonly known as Materials Test Reactors (MTRs). The reactor currently uses low-enriched uranium-silicon aluminium alloy plate-type fuel assemblies of conventional MTR design and can be operated at thermal powers up to 50 MW. The present operation of the reactor is limited, for various reasons (historical, economics and technical), to 20 MW thermal, which is reflected in the operating licence.

The reactor facility is situated on the Pelindaba site of Necsa in Northwest Province, approximately 27 kilometres west of the Pretoria central business district. The region is rural in nature, except for a few small towns around the Hartbeespoort dam.

The Pelindaba site is ideally suited to an installation such as the SAFARI-1 reactor facility, since it is very stable, with no recent seismic activity. The reactor facility is located at the top of a low hill.

The main buildings and structures comprising the reactor facility are:

- The reactor building, consisting of the reactor hall, a process wing containing the primary and secondary cooling systems, inlet and exhaust ventilation fan yards, an electrical wing, various laboratories and an office wing;
- The cooling towers, comprising the ultimate heat sink for the facility; and
- A ventilation exhaust chimney stack.

The reactor building is a multi-level structure, housing all the nuclear systems, including the reactor itself. The reactor hall is an engineered confinement structure, designed to prevent or minimise radiation and radioactive contamination leakage under all conditions. Within the reactor hall is the reactor pool, containing the reactor vessel and core, and a storage pool.

The upper volume of the reactor hall, houses a 25-ton gantry crane. The crane is also equipped with a 2.5-ton auxiliary hoist.

Within the reactor hall, a series of rooms contain the equipment for the reactor, pool and secondary water systems. These include:

- Pool Equipment Room
- Pump Compartments
- Reactor Heat Exchanger Compartment
- Chemical Mixing Compartment
- Degasifier Compartment
- Reactor Demineraliser Compartments
- Reactor Demineraliser Pump and Filter Compartment
- Secondary Pumps and Storage Tank Compartment

The electrical and ventilation wing is divided into two main areas. One side houses the reactor ventilation supply equipment, and the other side is made up of a series of rooms, which contain the transformers, batteries, interconnected Uninterrupted Power Supply (UPS) and the diesel generator.

An emergency control room is equipped with emergency communications equipment, emergency procedures as well as a computer, which is connected to the building network.

The three cooling towers consist of outer shells of concrete; each is divided into two cells with a common basin. Inside each cell, the air circulation is provided by means of a galvanised steel fan driven by a motor.

The tank room floor area is filled with storage tanks containing demineralised and process water. The core of the reactor is enclosed inside a tank, known as the reactor vessel, which in turn is located in an almost 9 m deep pool of water. The Reactor vessel is a welded aluminium cylindrical tank with flanged heads at either end. The overall height between flange faces is about 4.5 m with an internal diameter of about 1.6 m. The vessel was designed for an internal pressure of about 250 kPa and a temperature of about 65 'C.

The pool is divided into three parts, which can be separated from each other by means of removable gates. The three parts are:

- The reactor pool where the reactor vessel is located.
- The storage pool is used mainly for the storage of irradiated fuel elements and radioactive equipment
- The canal pool forms part of the laboratory area and connects the pool to the hot cell. It is used for transporting active equipment, elements and irradiated samples to the hot cells.

The primary cooling system of the reactor circulates cooling water through the reactor vessel to cool the core. A separate cooling system circulates water through the pool to control the pool water temperature and purify the water. Both of these circulating systems are closed loops and the heat they carry away from the reactor is transferred via heat exchangers to a secondary cooling system, which is an open circuit system that disposes of the heat through evaporation-type cooling towers to the atmosphere.

To maintain the purity of the primary coolant, it is subjected to demineralisation and degasification systems. There are two demineralisers for the primary coolant.

Further technical details are available, for free download, of a tank-in-pool, Oak Ridge Research reactor type here. https://digital.library.unt.edu/ark:/67531/metadc1035054/.